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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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SENNIGER POWERS (MSFT)
ONE METROPOLITAN SQUARE, 16TH FLOOR
ST. LOUIS, MO 63102

EXAMINER	
LIANG, REGINA	

ART UNIT	PAPER NUMBER
2629	

NOTIFICATION DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

uspatents@senniger.com

Office Action Summary	Application No.	Applicant(s)	
	10/761,976	KONG, YUAN	
	Examiner	Art Unit	
	Regina Liang	2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11 September 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-5,8-15,21-29 and 31-40* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5,8-15,21-29 and 31-40* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *27 May 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 27-29, 31-36, 39, 40 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The specification discloses "in addition to increased sensitivity, a greater number of paired electrodes 51 properly arranged may also provide information relating to the direction and speed of the relative movement between the device and the tracking surface 25 during lift-off. In one example (e.g., Fig. 6), a series of paired electrodes 51 are arranged along a y-direction (more electrode pairs may be incorporated in said series than are depicted in Fig. 6). By detecting the time sequence of capacitance changes sensed by the paired electrodes 51, the direction and speed of relative movement between the device 21 and the tracking surface 25 may be determined during the lift-off" (e.g., paragraph 32 of the specification). The specification discloses using "a greater number of paired electrodes", the direction and speed of relative movement between the device and the tracking surface "may be" determined during the lift-off. However, the claims 27, 29, and 31 require energizing at least two electrodes (two electrodes meet the claims), this is not

supported by the specification because the specification does not disclose only using two electrodes (one paired electrode) to determine the direction and speed of relative movement between the device and the tracking surface as claimed.

Furthermore, the specification only suggests the direction and speed "may be" determined by using "a greater number of paired electrodes" but fails to disclose exactly how this is to be done, especially only using two electrode (one paired electrode). Therefore, the specification does not provide support for the claims as amended in claims 27 and 29.

Claim Rejections - 35 USC § 103

3. Claims 1-5, 8-11, 14, 15, 23-28, 33-35, 37, 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shaw et al (US 6,587,093 hereinafter Shaw) in view of Van Schyndel et al (US 6,859,141 hereinafter Van Schyndel).

As to claim 27, Shaw discloses a data input device having capacitive touch sensor comprising energizing at least two electrodes (conductive plates 1102 in Figs 11A, 11B), the at least two electrodes is operatively connect to a data input device (mouse) configured to interact with a tracking surface (user's finger), measuring an electrical impedance between the at least two electrodes (a capacitance measuring circuits for measuring the capacitance of the electrodes, col. 7, lines 53-56) and determining the direction of relative movement between the data input device and the tracking surface as a function of the measured impedance (col. 10, 17-22).

Shaw discloses a "processor 1104 measures the total amount of finger signal as well as the finger position, and generates a scrolling signal only when sufficient finger signal is present" and the "processor 1104 compares the total summed capacitance on all sensors 1102 against a

threshold to determine finger presence or absence" (e.g. col. 10, lines 40-49). Shaw does not disclose determining the relative distance between the input device and the tracking surface as a function of the measured impedance. Figs. 1, 3, 4, of Van Schyndel teaches a proximity capacitance sensor (10, col. 6, lines 40-41) comprising one transmitting electrode (12) and one receiving electrode (14), the sensor generates an electric field from the transmitting electrode 12 and detects the electric field at the receiving electrode. Van Schyndel also teaches the sensor having an effective sensing range, the sensor processes the signals when an object approaches to within the sensing range, when no object is present within the effective sensing range of the detector, no signal is processed (col. 6, lines 40 to col. 7, line 19). In other words, Van Schyndel determines the relative distance between the sensor and the tracking surface (58) as a function of the measured impedance. Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize the two electrodes as taught by Van Schyndel in the data input device of Shaw so as to provide a transmit-receive type capacitance detector which permits objects to be reliably detected (col. 2, lines 26-28 of Van Schyndel). Thus, Shaw as modified by Van Schyndel would determine the relative distance between the data input device and the tracking surface as a function of the measured impedance (the effective sensing range corresponds to the relative distance between the input device and the tracking surface (user's finger), when the user's finger is within effective sensing range (finger presence), the processor of Shaw would process the touch signal to generate a scroll signal, when the user is not within the sensing range (finger absence), no scrolling signal is generated).

As to claim 28, Van Schyndel teaches measuring an electrical capacitance between the two electrodes (col. 6, lines 40-42).

As to claims 1, 2, 33, 34, note the discussion of claim 27 above. The range within the effective sensing range of Van Schyndel corresponds to measurement zone. The user or the object is not presented within the sensing range corresponds to lift-off detection distance. Thus, the processor of Shaw as modified by Van Schyndel would initiate a non-tracking mode in which the controller suspends tracking of relative movement when the data input device is spatially separated from the tracking surface by at least the lift-off detection distance (when the user's finger is within effective sensing range, the processor processes the scrolling signal (tracking mode), the user's finger is not within the sensing range of the input device, no signal is detected by the sensor and no scrolling signal is generated (non-tracking mode, or suspends tracking)).

As to claim 3, Shaw as modified by Van Schyndel teaches the sensor (1102, Figs. 11A, 11B of Shaw) is shaped and size to face the tracking surface (finger) when the input device is in the tracking mode (user's finger is proximate the input device).

As to claim 4, Shaw as modified by Van Schyndel would have the impedance sensor and the controller enclosed within a housing (1100 in Fig. 11A of Shaw).

As to claim 5, Shaw teaches the sensor (1102, Fig. 11A) is mounted on a surface of the housing (1100). Thus, Shaw as modified by Van Schyndel would having the sensor is shaped and sized to mount on the surface of the housing and shaped and size to engage the tracking surface.

As to claim 35, Shaw teaches the impedance sensor comprises at least two electrode (1102).

As to claim 8, Shaw teaches the sensor (plate 1102) are numerous and comprising at least six electrode (col. 10, lines 7-14).

As to claim 9, Shaw teaches the impedance sensor is a capacitance sensor having at least two electrodes.

As to claim 10, Figs. 11A of Shaw teaches the two electrodes (1102) are adjacent one another and are substantially equidistant from one another.

As to claim 11, Fig. 2A of Van Schyndel teaches the first electrode comprises a circular conductor (212), a second electrode comprises a substantially annular conductor (214).

As to claim 14, Van Schyndel teaches the sensor comprising an oscillator circuit (inherent the Oscillator includes RC resonance circuit).

As to claim 15, Shaw as modified by Van Schyndel does not disclose one electrode mounted on the data input device, the second electrode comprising the tracking surface. However. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Shaw as modified by Van Schyndel to have the electrodes located as claimed (one electrode mounted on the data input device, another electrode provided in user's tracking surface such as stylus), since it has been held that rearranging parts of an invention involves only routine skill in the art. In re Japikse, 86 USPQ 70.

As to claim 23, Shaw teaches the tracking surface is human skin (finger).

As to claims 24-26, Shaw as modified by Van Schyndel does not disclose the lift-off detection distance is no more than 4 millimeters, or is between about 0.5-4 or 0.5-3 millimeters. Shaw suggests the threshold can be set (col. 10, lines 46-56). Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Show as modified by Van Schyndel to have lift-off detection distances as claimed, since it has been held

that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

As to claims 37, 38, Fig. 11A of Shaw discloses the sensor comprising at least two or four electrodes (1102).

4. Claims 12, 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shaw and Van Schyndel as applied to claim 9 above, and further in view of Goldfine et al (US 2002/0075006 hereinafter Goldfine).

As to claim 12, Shaw as modified by Van Schyndel does not disclose the first and second electrodes comprises substantially comb-shaped conductors. However, Fig. 4 of Goldfine teaches the electrodes of the impendence sensor comprising substantially comb-shaped conductors which having digits extending at regular intervals from an edge of each electrode. Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the electrodes of Shaw as modified by Van Schyndel to have substantially comb-shaped conductors as taught by Goldfine since this structure "allows for improved accuracy in the determination of the properties of solid dielectrics by allowing different depths of penetration to be achieved with the same sensor footprint" (lines 12-16 of [0055] of Goldfine).

As to claim 13, Goldfine teaches the capacitance sensor creates a fringing field as claimed ([0009]-[0093].

5. Claims 21, 22, 29, 31, 32, 36, 39, 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hinckley and Van Schyndel as applied to claim 6 above, and further in view of Rabkin (US I 2003/0136897).

As to claims 21, 36, Shaw as modified by Van Schyndel does not disclose the impedance sensor is a resistance sensor or an inductance sensor. However, it is well known in the art that that a sensor comprising a resistance sensor or inductance sensor (see the abstract of Rabkin). Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to employ a resistance sensor or a inductance sensor as a sensor in the device of Shaw as modified by Van Schyndel so as to provide "an apparatus and method that employs a sensor to achieve a low cost user input interface that is both cost effective and reliable in all usage situations" ([0007] of Rabkin).

As to claim 22, Rabkin teaches the sensor comprising an inductance sensor. Thus, Shaw as modified by Van Schyndel and Rabkin would have an inductance-capacitance resonance circuit as claimed.

As to claim 29, note the discussion of claim 27 above. Shaw discloses determining a speed of relative movement between the data input device and tracking surface (finger, see col. 10, lines 28-33). Rabkin teaches the data input device comprising a resistance sensor. Thus, Shaw as modified by Van Schyndel and Rabkin would disclose the limitation as claimed.

As to claims 31, 32, Shaw and Van Schyndel disclose the sensor comprising at least two electrodes, and Rabkin teaches sensor comprising resistance sensor. Thus Shaw as modified by Van Schyndel and Rabkin would have the resistance sensor comprising at least two electrodes as claimed.

As to claim 39, Fig. 8B of Shaw discloses the sensor is mounted on an output surface of the housing (820).

As to claim 40, Shaw discloses the housing is formed from material having a higher resistance (insulating surface 1106, Fig. 11A) than the tracking surface.

Response to Arguments

4. Applicant's arguments with respect to claims 1-5, 8-15, 21-29, 31-40 have been considered but are moot in view of the new ground(s) of rejection.

Applicant's remarks regarding 112, 1st rejection of claims 27-29, 31-36, 39, 40 are not persuasive. The remarks on pages 8-9 merely alleges applicant's data input device monitoring changes in impedance, namely, capacitance to determine the distance between device 21 and the tracking surface for determining "a lift-off". Applicant's remarks that section [0032] of specification discloses "By detecting the time sequence of capacitance changes sensed by the paired electrodes 51, and the direction and the speed of relative movement between the device 21 and the tracking surface 25 may be determined during lift-off" finds support from the specification for claims 27 and 29. However, this section [0032] in the specification is referring to Fig. 6, Fig. 6 of the specification discloses using more than one pair of electrodes. Section [0032] of the specification discloses, "In one example (e.g., Fig. 6), a series of paired electrode 51 are arranged along a y-direction (more electrode pairs may be incorporated in said series than are depicted in Fig. 6). By detecting the time sequence of capacitance changes sensed by the paired electrodes 51, the direction and speed of relative movement between the device 21 and the tracking surface 25 may be determined during the lift-off". Therefore, section [0032] as cited by

applicant does not provide support using only one pair of electrode (two electrodes) to determine the direction and speed of relative movement between the device and the tracking surface as claimed in claims 27, 29 and 31.

Applicant's remarks on pages 8-11 do not show applicant have possession of invention, rather applicant is expecting one of ordinary skill in the art to fill in the gaps. The use of "may be" also implies it may not be done. Applicant fails to provide a disclosure showing how the determination of speed and direction is achieved using only one pair of electrode. Therefore applicant's remarks are not persuasive.

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Regina Liang whose telephone number is (571) 272-7693. The examiner can normally be reached on Monday-Friday from 8AM to 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Hjerpe, can be reached on (571) 272-7691. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Regina Liang
Primary Examiner
Art Unit 2674

10/19/07

RICHARD HJERPE
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600